



Nitoflor Hardtop

Monolithic surface hardening compound for fresh concrete floors

Uses

Nitoflor Hardtop provides a highly abrasion resistant surface to fresh concrete floors by the dry shake method which ensures that the hard wearing surface bonds monolithically to the base concrete. It is ideally suited for all industrial areas subjected to heavy traffic, e.g. power stations, heavy industry, breweries, agricultural buildings, distillation plants, laboratories, abattoirs, warehouse floors, loading bays and work shops.

Advantages

- Supplied ready to use - no additives required
- Provides a hard, abrasion resistant surface
- Forms monolithic bond with fresh concrete base
- Hard, dense surface resistant to oils and grease
- Available in a range of colours to improve working environment
- Non-metallic aggregate - will not rust when wet

Description

Nitoflor Hardtop surface hardening compound is a quality controlled, factory blended powder which is ready to use on site. It consists of special hard wearing aggregates selected for their physical properties of abrasion and wear resistance, Portland cement and special additives to improve workability. This combination produces a material

which is easy to trowel in the surface of fresh, wet concrete. Nitoflor Hardtop cures monolithically to provide a dense, non porous surface which is extremely hard wearing and abrasion resistant. Monolithic cure ensures that problems normally associated with thin ('granolithic') screeds, e.g. curling, shrinkage, cracking, etc. are completely overcome.

Nitoflor Hardtop is available in natural (concrete grey) colour as standard. Special colours, including Brick Red and Green can be produced on request for large orders.

Technical support

Fosroc offers a comprehensive range of high performance, high quality flooring, jointing and repair products for both new and existing floor surfaces. In addition, Fosroc offers a technical support package to specifiers, end-users and contractors, as well as on-site technical assistance in locations all over the world.

Design criteria

Base concrete

The base concrete should have a minimum cement content of 300 kg/m³. The concrete mix should be designed to minimise segregation and control bleeding, although some limited bleed is desirable to ensure sufficient moisture is available to wet out the Nitoflor Hardtop when it is first applied.



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The use of water reducing admixtures from the Fosroc Conplast* range is strongly recommended in order to achieve a water:cement ratio below 0.55. The base concrete should have an on-site slump of between 75 and 100 mm.

The base concrete should be laid and compacted in accordance with good concrete practice, taking care to ensure accurate finished profile and minimum laitance build up. Particular attention should be paid to bay edges and corners to ensure full compaction of the base concrete - see application instructions.

Vacuum dewatering is not recommended.

Properties

Abrasion resistance

The abrasion resistance of Nitoflor Hardtop has been independently tested by the British Board of Agreement (Report number 610 refers). The test using an 'A' Court abrasion-testing machine showed that Nitoflor Hardtop improves the abrasion resistance of concrete by 225%.

Compressive strength (to BS 1881 Part 106 1983)

At water contents equivalent to those obtained in practical applications, the typical 28 day compressive strength of Nitoflor Hardtop cubes is 70 N/mm².

Hardness (Mohs scale)

The selected aggregates contained within Nitoflor Hardtop have a hardness value of 7 on the Mohs original scale.

Specification clauses

Floors shall be surfaced where shown with Nitoflor Hardtop, a monolithic surface hardening compound containing non-metallic, rust-free aggregates. The aggregate shall have a value not less than 7 on the Mohs original scale and the compound shall have the ability to improve the abrasion resistance of concrete by 225%.

Nitoflor Hardtop powder shall be applied to the freshly-laid concrete floor by the dry-shake method. It shall be applied at the point where light foot traffic leaves an imprint of about 3-6 mm.

The powder shall be applied in two stages, in full accordance with the manufacturer's instructions, to achieve an overall application rate not less than 5 kg/m². Special attention shall be paid to bay edges in accordance with the manufacturer's written requirements.

Application instructions

Nitoflor Hardtop should be applied at an even application rate of 5 kg/m². It is recommended that the floor be marked off into bays of known area. Sufficient materials should then be laid out to meet the recommended spread rate.

Application of Nitoflor Hardtop should begin without delay when the base concrete has stiffened to the point when light foot traffic leaves an imprint of about 3-6 mm. Any bleed water should now have evaporated, but the concrete should have a wet sheen.

On large floors it will be necessary to work progressively behind the laying team to ensure application at the correct time.

Nitoflor Hardtop is applied in two stages.

- a) The first application is broadcast at an even rate of 3 kg/m² onto the concrete surface. When the material becomes uniformly dark by the absorption of moisture from the base concrete, this first application can be floated. Wooden floats or, on large areas, a power float, may be used. It is important, however, that the surface is not overworked.
- b) Immediately after floating, the remaining 2 kg/m² of Nitoflor Hardtop is applied evenly over the surface at right angles to the first. Again, when moisture has been absorbed the surface can be floated in the same way as before.

Final finishing of the floor using the blades of a power float can be carried out when the floor has stiffened sufficiently so that damage will not be caused.

Bay edges

Where bay edges are likely to suffer particularly heavy wear or impact and where saw-cut transverse control joints are to be located, it is desirable to give these areas additional protection, by one of the following methods prior to full treatment of the entire surface:

- a) Immediately after levelling the freshly placed concrete, Nitoflor Hardtop should be sprinkled by hand at a rate of 0.5 kg/lin.m. (5 kg/m²) in a strip 100 mm wide along the bay edge and hand-trowelled into the surface.
- b) Immediately after levelling the freshly placed concrete, remove a wedge of the concrete 10 mm deep at the slab edge and tapered up to slab level. Replace this with a very stiff paste of Nitoflor Hardtop, mixed thoroughly with a small amount of water. Ensure it is fully compacted on to the base concrete.



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These reinforced areas will be further strengthened when the subsequent full treatment is applied.

Timing of the application of Nitoflor Hardtop is important and care should be taken to ensure adequate labour, machinery and material is available to complete the whole area while sufficient moisture is available to fully react with the powder to provide a good dense finish. Conversely, the full benefit will not be achieved if the material is applied to early when bleed water is still present.

Any addition of water to wet out the surface on either the first or second application of Nitoflor Hardtop will be detrimental to the overall quality of the floor.

Pigmented floors require extra care and need to be protected from damage and staining after completion. It is essential that the correct recommended rate of application is achieved over the entire floor area in order to avoid possible localised variations in shading.

Note: It is recommended that Nitoflor Hardtop is applied by an approved Fosroc specialist applicator who has been given detailed training in its use. For further information, please contact your local Fosroc office or representative.

Cleaning

All equipment should be washed with clean water immediately after use and before the material has hardened.

Curing

Proper curing of concrete floors treated with Nitoflor Hardtop is essential to the physical properties of the finished floor. Fosroc's recommended curing compound from the Concure range should be applied on to the finished floor 10 minutes after the power floating operation has been completed. To avoid differential absorption, two coats are recommended.

The use of polythene sheet, wet hessian and damp sand or ponding are not recommended. The use of salt water or brackish water should not be considered under any circumstances.

Surface treatments

Subsequent surface treatments are not normally necessary with Nitoflor Hardtop because of the high density, low porosity finish.

Limitations

In particularly aggressive environments, where abrasion resistance of the highest order is required, consideration should be given to the use of Nitoflor Emeritop*. For guidance contact your local Fosroc office or representative.

Do not use Nitoflor Hardtop in areas exposed to acids and their salts or other materials known to rapidly attack or deteriorate concrete containing Ordinary Portland Cement.

Do not apply to concrete containing calcium chloride or concrete having greater than 3% air entrainment.

Where a coloured floor is required, it is strongly recommended that a site trial is undertaken to assess possible local variations caused by aggregates and sands used in the base concrete.

Estimating

Supply

The materials are supplied as follows:

Nitoflor Hardtop:	25 kg bags
Concure 75:	210 litre drum
Coverage Nitoflor Hardtop:	3-7 kg/m ²
Concure 75:	6 m ² /litre

Applications should comply with the recommended rate to obtain the published performance characteristics. Any reduction may have a detrimental effect on the finished floor's abrasion resistance and, in the case of pigmented floors, the quality and consistency of the finish.

The average figures for liquid products are theoretical. Due to the variety and nature of possible substrates, and wastage factors, practical coverage figures will be reduced.

Storage

If protected from the environment in original undamaged packing, the shelf life of Nitoflor Hardtop and Concure 75 is 12 months.

If stored in high temperature and high humidity locations the shelf life may be reduced.



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Precautions

Health and safety

Nitoflor Hardtop contains cement powders which when mixed or become damp, release alkalis which can be harmful to the skin.

Irritating to the eyes, respiratory system and skin

Avoid inhalation of dust

Avoid contact with skin and eyes

Wear suitable gloves and eye protection

In case of contact with skin, wash with water

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

For further information, see Product Safety Data Sheet.

Fire

Nitoflor Hardtop is non-flammable.

Additional information

Nitoflor Hardtop produces an extremely durable and abrasion resistant floor. However, in particularly aggressive environments, where abrasion resistance of the highest order is required, consideration should be given to the use of Nitoflor Emeritop - see separate data sheet.

It is strongly recommended that a heavy duty sealant such as Nitoseal 280* or Thioflex 600" is used to seal internal joints of factory and warehouse floors to take account of the increased capacity of the treated floor.

For further information on these products, and others within the Fosroc range, please contact your local Fosroc office or representative.



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